

## **Category I and Category II Exemption for the AMWTP WMF-628**

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Advanced Mixed Waste Treatment Project

Approved:

*(Signature on file—DCR-5655)*

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02/19/07

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Date

Next Periodic Review: 02/27/08

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**ACRONYMS AND ABBREVIATIONS**

AAC	acceptable ambient concentration
AMWTP	Advanced Mixed Waste Treatment Project
CAP-88	Clean Air Act Assessment Package–1988
EDF	engineering design file
EPA	Environmental Protection Agency
GGT	gas generation test
HEPA	high-efficiency particulate air
HSGS	headspace gas sample
IDAPA	Idaho Administrative Procedures Act
IDC	item description code
INL	Idaho National Laboratory
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOAA	National Oceanic and Atmospheric Administration
PM	particulate matter
RTR	real-time radiography
RWMC	Radioactive Waste Management Complex
SSC	soft-sided containment
SWB	standard waste box
TAP	toxic air pollutant
TSA	Transuranic Storage Area
VOC	volatile organic compound
WMF	Waste Management Facility

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## **1.0 INTRODUCTION**

This document demonstrates that the Advanced Mixed Waste Treatment Project (AMWTP) Waste Management Facility (WMF)–628 meets the requirements to be exempt from obtaining a permit to construct. WMF 628 is a storage, characterization, and treatment facility that meets all of the general exemption criteria found in the Idaho Administrative Procedures Act (IDAPA 58.01.01.220 and the specific requirements for a Category I Exemption (IDAPA 58.01.01.221). The propane heaters located in WMF 628 also meet all of the general exemption criteria (IDAPA 58.01.01.220) and the specific requirements for a Category II Exemption (IDAPA 58.01.01.222). A list of each requirement and how the requirement is met are provided in the Results and Analysis section (Section 6.0).

WMF 628 is located at the Radioactive Waste Management Complex (RWMC) on the Idaho National Laboratory (INL). WMF 628 houses real-time radiography (RTR) units, container assay units, head space gas sampling (HSGS) equipment, gas generation testing (GGT) units, and a soft-sided containment (SSC) tent. Activities within the SSC tent include adding absorbent material to drums, decanting liquid from drums, relidding drums, removing an inner container (either a drum or intact liner) from a drum, and loading standard waste boxes (SWBs). Various equipment used within WMF 628 includes forklifts, trucks with trailers, and a propane heating system.

## **2.0 PROCESS DESCRIPTION AND POTENTIAL EMISSION SOURCES**

Containers are received at WMF 628 for storage, characterization, and/or treatment. A brief description of the characterization/treatment processes performed in WMF 628 is provided below. Each process description includes information on the potential for a given process to release emissions from the waste constituents.

### **2.1 Real-Time Radiography Examination**

Real-time radiography examination is a characterization operation performed on waste containers to determine/confirm the waste material parameters and to detect prohibited items and special conditions. Real-time radiography examination is also used to validate existing characterization data or, in the case of unknown waste containers, to correlate the contents of the container with known waste types from generator sites. During RTR operations, the waste contents are not exposed (i.e., container is not breached), as RTR is a non-intrusive characterization method. Therefore, it is assumed that no emissions are generated during RTR operations.

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## **2.2 Radioassay**

Radioassay is a characterization operation performed to determine/confirm the isotopic composition of nuclear material, transuranic isotope activity concentration, and decay heat. These measurements provide data necessary to differentiate transuranic from low-level wastes. Assay data is also utilized to implement criticality control throughout the AMWTP waste management units. Assay operation is a non-intrusive characterization method, and it is assumed that no emissions are generated during assay operations.

## **2.3 Headspace Gas Sampling**

Headspace gas sampling is performed to determine the presence of potential explosive headspace gases within drums. Drums may also be sampled to determine the concentration of hydrogen, methane, and volatile organic compounds (VOCs). Since all emissions are passed through an in-line high efficiency particulate air (HEPA) filter, radionuclide and particulate matter (PM) are not emitted during HSGS operations. Volatile organic compounds are also not expected to be emitted during HSGS operations, as all VOCs are passed directly through a gas chromatographic system.

## **2.4 Gas Generation Testing**

Gas generation testing units are designed to measure the total gas and hydrogen generation rates from drums. Drums requiring GGT are those that exceed the TRUPACT II Safety Analysis Report decay heat limits or do not have an established theoretical bounding gas generation rate. Up to 80 stand-alone units may be present within WMF 628 at any given time. Each unit consists of a canister shell that is placed over a drum onto a base plate. The canister shell is bolted to the base plate to create a seal between the canister and base. This seal ensures that gases are contained within the annulus between the canister shell and the drum. Exhaust ventilation for the gas generation units is connected to the building exhaust system. All emissions from drums during gas generation testing are passed through a HEPA filter, which is located on the drum. Therefore, radionuclide and PM are not expected to be emitted during GGT operations. Volatile organic compounds have the potential to be emitted during GGT operations.

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## **2.5 Liquid Absorption/Decanting of Liquid**

Liquid absorption occurs within the SSC tent and consists of removing a drum lid, opening the drum liner, and opening layers of containment (e.g., polyethylene bags) to allow access to liquids present in a drum. Depending upon the type and amount of liquid present, a liquid absorbent material is added to the drum. In some drums, there may be inadequate void volume available to allow for the addition of absorbent material. In such a case, liquid may be decanted from the drum into a separate collection container where the liquid can be absorbed. Liquid may be decanted using ladles, scoops, pails, pumps, siphons, tipping, etc. As the waste is directly exposed to the operational area of the SSC tent, there is the potential for radionuclides, PM, and VOCs to be emitted during absorption and decanting operations.

## **2.6 Relidding of Drums**

Drums requiring relidding can be taken into the SSC tent. Relidding is usually required for drums that have been vented in WMF 636, WMF-634, or WMF-615 because of bulging or the lid of the drum is degraded to such a point that a filter/vent cannot be inserted. All new lids placed onto drums have a vent installed in the lid. During the relidding process, the drum contents are not intentionally disturbed. However, because the lid of the drum is briefly removed, there is the opportunity for radionuclides, PM, and VOCs to be emitted during relidding operations.

## **2.7 Removal of an Inner Container (Drum or Intact Liner) from a Drum**

Removal of an inner container from a drum occurs within the SSC tent. This activity consists of either removing an intact liner from a drum or removing an intact drum from an overpack. Removal of an inner container from a drum may be necessary if the outer drum does not have adequate integrity to meet shipping requirements. In this case, the inner container is intact and has adequate integrity for handling purposes. For the removal of a liner, the liner is removed from the drum and placed into a different drum. During the removal of an inner container, waste contents in the inner container are not significantly disturbed. In the case of where the inner container is a liner, wastes constituents are exposed for a period of time due to the fact that either the lid of the liner is removed or holes are cut in the liner in order to remove the liner from the outer container. As such, there is the potential for radionuclides, PM, and VOCs to be emitted during the operations involving removal of inner containers.

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## **2.8 Standard Waste Box Loading**

Standard waste boxes will be loaded within the SSC tent with either 55-gal or 100-gal drums. In order to load an SWB, the lid of a drum is removed and a vented shower cap may be installed. The drum is lifted using various pieces of equipment and placed into the SWB. During the removal of a drum lid, the contents of the drum are not intentionally disturbed. However, because the lid of the drum is briefly removed, there is the opportunity for radionuclides, PM, and VOCs to be emitted during operations. For the purposes of this document, 100-gal drums are not assumed to emit any radionuclides, PM, or VOCs during outer lid removal, as there is an inner lid in the drum and 100-gal drums are assumed to have no liquids. In the event that the inner lid of the 100-gal drum is removed, it is assumed that radionuclides, PM, and VOCs will be emitted during operations. All 55-gal drums associated with SWB loading are assumed to emit radionuclides, PM, and VOCs.

## **3.0 WASTE DESCRIPTION**

Both debris and non-debris wastes will be stored, characterized, and treated at WMF-628. The estimated concentrations (bounding estimates based on existing documentation plus assumptions) of hazardous pollutants in each waste stream are based on the findings detailed in "Waste Description Information for Transuranic-Contaminated Wastes Stored at the INEL," (B.D. Ravio et al. 1995). The highest value for the estimated concentration of a particular pollutant in a waste type (debris or non-debris) is assigned to that pollutant. A concentration is then determined for all AMWTP waste by assigning the highest value of a particular pollutant between debris and non-debris waste. For example, of the various waste streams in the non-debris waste type, waste stream RFETS-003 has the highest estimated concentration (5% by weight) of carbon tetrachloride. Therefore, for the non-debris waste type, a conservative concentration of 5 wt% is assigned to carbon tetrachloride. Likewise, the highest estimated concentration of carbon tetrachloride for the debris waste type is estimated at 1 wt%. Therefore, a conservative concentration of 5 wt% is assigned to carbon tetrachloride for all AMWTP waste.

Where no concentration is given for an "estimated concentration" for a pollutant in the Ravio report, the analysis uses either the "maximum expected" concentration stated in the Ravio report, or values are assigned from sampling and analysis data. The pollutant assigned concentrations from analytical data includes arsenic, barium, cadmium, chromium, lead, and silver. All waste streams have been cross-referenced with RPT-TRUW-12, AMWTP Waste Stream Designations, which lists pollutants expected to be found in Transuranic Storage Area (TSA) waste. However, RPT-TRUW-12 does not provide concentrations of pollutants. Therefore, pollutants listed in RPT-TRUW-12 that are not listed in the Ravio report or provided through sampling and analysis activities are conservatively assigned a concentration of 1 wt%.

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The total radionuclide inventory for TSA waste is documented in the Ravio report, which is used as the basis for potential radioactive contamination in the waste. The radionuclide contamination is assumed to be equally distributed among all the waste inventory (65,000 m<sup>3</sup>) listed in the Ravio report. The radionuclide inventory for Rocky Flats Items Description Code (IDC) 003 (i.e., organic setups) is documented in EDF-0152, Average Activity in IDC 003 Waste. The radionuclide inventory for Rocky Flats IDC 003 is based on assay results obtained by AMWTP.

#### **4.0 RADIONUCLIDE EMISSION CALCULATIONS**

During the characterization and treatment activities performed within WMF 628, radionuclides have the potential to be emitted from various operations. As described previously, the total inventory of radionuclides processed through WMF 628 on an annual basis was calculated using information provided in the Ravio report and EDF-0152.

In order to determine the potential for radionuclide releases, the following processing rates were applied. It is assumed that a given volume of waste may undergo any or all SSC tent processes listed in Section 2.0 for the SSC tent (i.e., liquid absorption/decanting, relidding of drums, removal of an inner container from a drum, and SWB loading) within a given calendar day. The processing rates that were used are:

- Soft-sided containment tent processing:
  - Processing Rocky Flats IDC 003 waste at a rate of 6,000 55-gal drums/year (or volume equivalent)
  - Processing waste with a radionuclide inventory based on the Raivo report (hereinafter referred to as the average AMWTP waste) at a rate of 550 55-gal drums/year (or volume equivalent)

**NOTE:** *Additional average AMWTP waste may be processed in place of processing Rocky Flats ID 003 waste. One 55-gal average AMWTP waste container may be processed in lieu of 35 55-gal containers of Rocky Flats IDC 003.*

- Waste processing (average AMWTP waste and Rocky Flats IDC 003 waste) within the SSC tent shall be limited to 45 55-gal drums/day (or volume equivalent).

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Using these stated process rates, a radiological source term is determined for the various activities occurring within WMF 628. From the source term, an analysis of the radionuclide emissions can be performed in order to determine if the activities meet the general exemption requirements for IDAPA 58.01.01.220, as well as the conditions required for an exemption under IDAPA 58.01.01.221 (Category I). That is, the potential of the building to emit radionuclides is less than 1% of the standard in 40 CFR 61, Subpart H. Table 4-1 presents the source term used in the emissions analysis, which is described in further detail below. The estimates presented in the table are based on the throughput for a process, multiplied by the activity concentration for a specific radionuclide and the appropriate re suspension factor to account for release into the offgas.

#### **4.1 Re-suspension Factor**

The values in Appendix D of 40 CFR 61 were used for the re suspension factor (i.e., the amount of each radionuclide released from each process). Although the distribution of hazardous and radioactive contaminants in the waste generally is not well characterized, information about the physical characteristics and volumes/masses of the waste is available. Based upon this information, a re suspension factor for the various characterization and treatment processes was determined. For radionuclide emission calculations, it is assumed that 5% of the waste is liquid (re suspension factor of 1.0E-03) and the remaining amount of the waste is solid (re suspension factor of 1.0E-06). Historically, 26% of the waste presently managed at the AMWTP has been assumed to be liquid. This liquid percentage was estimated based upon RTR examination of containers, which determined that up to 26% of waste containers may contain up to 1% liquids. However, to ensure all releases are conservative, a liquid percentage of 5% was chosen for calculating radionuclide emissions.

#### **4.2 Filtration Factor**

Exhaust from the SSC tent passes through two HEPA filters, each with a conservative 99% efficiency, per 40 CFR 61, Appendix D. Based upon this, the fraction of the radionuclides released during operations within the SSC tent will be reduced by a filtration fraction of  $0.01 \times 0.01 = 1.0 \times 10^{-4}$ . However, no credit is taken for air pollution control equipment for unabated releases. Table 4-1 presents the source term used and the unit dose calculated using the Clean Air Act Assessment Package – 1988 (CAP-88) analysis, which is described below.

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#### **4.3 Clean Air Act Assessment Package – 1988 Analysis**

Dose assessment modeling was done using the CAP-88 computer code, the program approved by the Environmental Protection Agency (EPA) for assessment of dose and risk from radionuclide emissions to air in compliance with National Emission Standards for Hazardous Air Pollutants (NESHAPs) for radionuclides other than radon (40 CFR 61, Subpart H).

##### **4.3.1 Meteorological Data**

The input meteorological data used for the CAP-88 model is a 10-year (1994 to 2003) compilation of data developed from the 15-m high Central Facilities Area meteorological tower data. This data has been collected by the National Oceanic and Atmospheric Administration (NOAA) office in Idaho Falls, Idaho. Wind data from Central Facilities Area were used because a reliable long-term data set does not yet exist for the RWMC. The NOAA data incorporates calm hours into the lowest wind-speed class.

##### **4.3.2 Release Parameters**

Emissions were modeled as a ground level point source to conservatively bound the downwind receptor impacts for any stack or vent design. Therefore, any elevated stack release would result in lower downwind air concentrations at ground level than those calculated. In addition, if the release point is through a roof vent or short stack, the plume would be initially diluted by building wake effects that also would reduce far-field concentrations compared to those calculated using the point source assumptions in this assessment.

##### **4.3.3 Receptor Location**

The receptor location evaluated was a point on the INL boundary where a maximum dose would occur from WMF 628 releases. This point was determined to be in the south-southwest sector at a distance of 5,700 meters (Staley 2004). The dose calculated at this location is based upon continuous exposure to inhalation, ground deposition, immersion, and ingestion of contaminated food and represents the hypothetical worst case dose that would be received by an actual receptor.

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#### **4.4 Radionuclide Emission Results**

##### **4.4.1 Application to Construct (40 CFR 61.96)**

Based upon the filtration and re-suspension factors given in Appendix D of 40 CFR 61, it was determined that the total exposure to any individual beyond the INL border is 1.41E-04 mrem/yr. Federal regulations state that if the radiological emissions from a facility are below 0.1 mrem/yr using the method(s) required in Appendix D of 40 CFR 61 then an application to construct is not required.

##### **4.4.2 Continuous Monitoring (40 CFR 61.93)**

For the purposes of determining if continuous monitoring is required, the facility must evaluate radionuclide release rates based on the discharge of the effluent stream that would result if all pollution control equipment did not exist, but facility operations were otherwise normal. To calculate the radionuclide release rate, it was assumed that 5% of the waste is liquid. Additionally, as operational processes performed within WMF-628 are generally non-intrusive and do not involve significantly disturbing the waste contents; it was assumed that 60% of the waste has the ability to be dispersed into the air. Using this assumption, the amount of liquid present in the waste, and a re suspension factor of 1.0E-04 for liquids and 1.0E-06 for solids, it was determined that the total unmitigated dose is 0.09 mrem/yr. See Table 4-1 for additional information. Therefore, continuous air monitoring is not required as the calculated unmitigated dose is less than 0.1 mrem/yr.

##### **4.4.3 Exemption Criteria (IDAPA 58.01.01.221.01)**

In order to meet the Category Exemption I criteria, the source shall have potential emissions that are less than 1% of the applicable radionuclide standards in 40 CFR 61, Subpart H. As shown in the above section, the total unmitigated dose from WMF-628 is calculated at 0.09 mrem/yr. Therefore, the exposure to an individual as a result of radionuclide emissions from operations occurring within WMF-628 is within regulatory exemption criteria.

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**Table 4-1. Radionuclide Source Term for WMF-628.**

Nuclide	Average AMWTP Waste Activity Concentration (Ci/kg) <sup>a</sup>	Rocky Flats IDC003 Waste Activity Concentration (Ci/kg) <sup>b</sup>	Unit Ci Dose (mrem/Ci)	Waste Available for Release (60%)		Waste Available for Release (100%)		
				Total Unabated (Ci/yr) <sup>c,d</sup>	Total Unabated (mrem/yr) <sup>c,d</sup>	Total Unabated (Ci/yr) <sup>c,d</sup>	Total Unabated (mrem/yr) <sup>c,d</sup>	Total Abated (mrem/yr) <sup>c,e</sup>
Am-241	3.48E-03	4.52E-05	25.9	1.62E-03	4.20E-02	2.31E-02	5.99E-01	5.99E-05
Pu-238	3.30E-03	6.06E-06	15.6	1.38E-03	2.15E-02	1.96E-02	3.06E-01	3.06E-05
Pu-239	1.96E-03	1.72E-04	16.8	1.57E-03	2.63E-02	2.23E-02	3.75E-01	3.75E-05
Pu-240	4.53E-04	3.83E-05	16.8	3.56E-04	5.97E-03	5.08E-03	8.53E-02	8.53E-06
Pu-242	2.96E-08	3.99E-09	16	2.99E-08	4.78E-07	4.26E-07	6.82E-06	6.82E-10
Pu-241	4.59E-03	4.15E-04	2.64E-01	3.72E-03	9.83E-04	5.31E-02	1.40E-02	1.40E-06
Cs-137	6.44E-05	6.44E-05	3.06E-01	3.13E-04	9.58E-05	4.47E-03	1.37E-03	1.37E-07
Sr-90	5.75E-05	5.75E-05	2.09E-01	2.80E-04	5.85E-05	3.99E-03	8.35E-04	8.35E-08
U-233	2.91E-05	2.91E-05	6.42	1.41E-04	9.07E-04	2.02E-03	1.29E-02	1.29E-06
Cm-244	1.54E-05	1.54E-05	13.7	7.47E-05	1.02E-03	1.07E-03	1.46E-02	1.46E-06
H-3 <sup>f</sup>	7.52E-06	7.52E-06	5.09E-05	3.66E-05	1.86E-09	5.22E-04	2.66E-08	2.66E-08
Cs-134	3.16E-06	3.16E-06	1.65E-01	1.54E-05	2.54E-06	2.19E-04	3.62E-05	3.62E-09
Co-60	2.85E-06	2.85E-06	3.02E-01	1.39E-05	4.18E-06	1.98E-04	5.97E-05	5.97E-09
Bi-212	7.58E-07	7.58E-07	9.75E-04	3.69E-06	3.59E-09	5.26E-05	5.13E-08	5.13E-12
C-14 <sup>f</sup>	6.78E-08	6.78E-08	2.82E-03	3.30E-07	9.30E-10	4.71E-06	1.33E-08	1.33E-08
Ce-144	7.72E-07	7.72E-07	2.49E-02	3.75E-06	9.35E-08	5.36E-05	1.33E-06	1.33E-10
Fe-55	3.22E-08	3.22E-08	6.60E-04	1.57E-07	1.03E-10	2.23E-06	1.47E-09	1.47E-13
Kr-85	1.95E-07	1.95E-07	1.12E-07	9.50E-07	1.06E-13	1.36E-05	1.52E-12	1.52E-16
Ni-63	1.02E-07	1.02E-07	6.16E-04	4.95E-07	3.05E-10	7.06E-06	4.35E-09	4.35E-13
Pb-212	7.58E-07	7.58E-07	7.26E-03	3.69E-06	2.68E-08	5.26E-05	3.82E-07	3.82E-11
Pm-147	7.78E-07	7.78E-07	2.29E-03	3.78E-06	8.66E-09	5.40E-05	1.24E-07	1.24E-11
Po-212 <sup>g</sup>	4.84E-07	4.84E-07	-	2.36E-06	-	3.36E-05	-	-
Po-216 <sup>g</sup>	7.58E-07	7.58E-07	-	3.69E-06	-	5.26E-05	-	-
Pr-144	7.75E-07	7.75E-07	1.25E-06	3.77E-06	4.71E-12	5.38E-05	6.72E-11	6.72E-15
Sb-125	4.70E-08	4.70E-08	3.17E-02	2.29E-07	7.25E-09	3.26E-06	1.03E-07	1.03E-11
Th-232	2.08E-07	2.08E-07	28.8	1.01E-06	2.92E-05	1.45E-05	4.16E-04	4.16E-08
Tl-208	2.72E-07	2.72E-07	5.76E-07	1.32E-06	7.61E-13	1.89E-05	1.09E-11	1.09E-15
U-232	7.41E-07	7.41E-07	34.4	3.60E-06	1.24E-04	5.14E-05	1.77E-03	1.77E-07
U-234	1.65E-07	1.65E-07	6.35	8.01E-07	5.08E-06	1.14E-05	7.26E-05	7.26E-09
				<b>Total =</b>	9.90E-02		<b>Total =</b>	1.41E-04

a. Radionuclide activity concentration taken from Table 4-1 in the Ravio report. Based upon a total mass of 35,107,163 kg.

b. Radionuclide activity concentration taken from EDF-0152.

c. Source term derived using a release fraction of 1.0E-06 for solids and 1.0E-03 for liquids.

d. Filtration factor not included (i.e., unabated).

e. Filtration factor of 1.0E-04 included (i.e., abated) for two HEPA filters.

f. Filtration factor is not used for H-3 and C-14 (gases) in the abatement calculation.

g. Po is part of the Rn decay chain; Rn is not regulated under NESHAP.

## **5.0 NONRADIOLOGICAL EMISSION CALCULATIONS**

### **5.1 Process Emissions**

The sources of emissions for nonradiological sources, as described previously, include performing GGT, absorption/decanting of liquids, drum relidding, the removal of an inner container from a drum, and SWB loading. It is assumed that all processes with the potential to emit VOCs and/or PM have the same potential to emit VOCs and/or PM. The ability of a process to emit VOCs and PM is discussed in additional detail in Section 2.0. Process rates for each operation are described in Section 4.0 for operations other than GGT, which has a process rate of a maximum of 40 55-gal non-debris drums per day. From the various operations, VOC and PM emissions are estimated.

In order to calculate the PM and VOC emission rates, emission factors from the EPA publication AP-42, Supplement F of the *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*, (EPA 1985) are multiplied by the throughput for each operation. For non-radionuclide emission calculations, it is assumed that 0.26% of the waste is liquid and the remaining amount of the waste is solid. This information is based on historical RTR data which indicates that 26% of waste containers may contain up to 1% liquids. Total PM estimates are summarized in Table 5-1 and total VOC emission rates are summarized in Table 5-2. Individual toxic air pollutants (TAPs) and lead emissions are then determined by multiplying the worst case concentration percentage of each constituent by the total VOCs or PM emitted for that process. The TAPs are separated into those that are likely to be emitted as VOCs and those likely to be emitted as PM. TAP emission rates are provided in Table 5-3. Table 5-4 compares TAP emission rates to the emission limits and the acceptable ambient concentration (AAC) listed in IDAPA 58.01.01.585 and 586.

### **5.2 Propane Heater Emissions**

There are two propane heaters installed to provide heat to building WMF-628 in addition to several electric heaters. The propane heaters are each rated at 598,000 Btu/hr. Emissions from the propane are estimated using AP-42 emission factors. The maximum hourly rate is calculated assuming the heaters operate at the rated input capacities for 1.0 hour. The yearly rate is based on the maximum possible annual propane usage. Emissions are composed of PM, VOCs, and criteria pollutants. Table 5-5 summarizes the estimated emissions from the two propane heaters located in WMF-628.

<p style="text-align: center;"><b><i>Advanced Mixed Waste Treatment Facility</i></b> <b>Category I and Category II Exemption for the AMWTP WMF-628</b></p>
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**5.3    Applicability Analysis for 40 CFR 63, Subpart DDDDD – National Emission Standard for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters**

40 CFR 63 Subpart DDDDD is not applicable as the propane heaters for WMF 628 do not meet the definition of a process heater under 40 CFR 63.7575. Furthermore, these heaters are exempt from any requirements under 40 CFR 63, Subpart DDDDD, because they are considered a new or reconstructed small gaseous fuel unit (40 CFR 63.7506c[4]).

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**Table 5-1. Total Uncontrolled Particulate Matter Emissions from WMF-628 Operations**

Operation	Process Rate	Waste Density <sup>a</sup>	Waste Throughput <sup>b</sup>	Emission Factor <sup>c</sup>	HEPA Filter <sup>d</sup>	Total PM Emitted
	dm/day	lb/dm	ton/hr	lb/ton		lb/hr
SSC Tent Waste Processing <sup>f</sup>	45	525	0.4922	0.01	0.0001	4.92E-07
<b>Total Contaminated PM</b>						<b>4.92E-07</b>
<p>a. Non-debris waste density used for overall waste density for conservatism, as non-debris waste has a higher density than debris waste. Waste density is based upon average value calculated from Ravio report.</p> <p>b. Waste Throughput (Ton/hr) = Process Rate (dm/day) x Waste Density (lb/dm) / (2,000 lb/ton x 24 hr/day).</p> <p>c. Worst-case PM emissions are assumed to be generated at a conservative rate of 0.01 lb emitted per ton processed. This value was determined from an emission rate for concrete batching (i.e., 0.1 lb/ton), which is provided in Table 11.12 of AP-42, Emission Factors for Concrete Batching. Concrete batching is a much dustier operation than any of the operations performed in the SSC tent. Therefore, it is assumed that an emission factor of 10% of the listed concrete batching emission factor will be adequate.</p> <p>d. Two HEPA filters are located on the SSC tent, which provides a PM removal efficiency of 1.0E-04 (99% per filter).</p> <p>e. Total PM Emitted (lb/hr) = Waste Throughput (lb/ton) x Emission Factor (lb/ton) x HEPA filter.</p> <p>f. See Section 2.0 for a description of the waste processing activities that may occur in the SSC tent.</p>						

**Table 5-2. Total Uncontrolled VOC Emissions from WMF-628 Operations**

Operation	Process Rate	Waste Density <sup>a</sup>	Waste Throughput <sup>b</sup>	Liquid Throughput <sup>c</sup>	Emission Factor <sup>d</sup>	VOC Emissions <sup>e</sup>
	dm/day	lb/dm	ton/hr	ton/hr	lb/ton	lb/hr
SSC Tent Waste Processing <sup>f</sup>	45	525	4.92E-01	2.46E-02	0.72	1.77E-02
GGT (non-debris waste only)	40	525	4.38E-01	1.14E-03	0.72	8.19E-04
<b>Total VOC Emissions</b>						<b>1.74E-03</b>
<p>a. Non-debris waste density used for overall waste density for conservatism, as non-debris waste has a higher density than debris waste. Waste density is based upon average value calculated from Ravio report.</p> <p>b. Waste Throughput (Ton/hr) = Process Rate (dm/day) x Waste Density (lb/dm) / (2000 lb/ton x 24 hr/day).</p> <p>c. The quantity of liquid in the waste stream is assumed to be 1% of the waste volume; therefore, Liquid Throughput = 0.01 x 0.26 x Waste Throughput.</p> <p>d. Emission factors are from AP-42, Table 4.7-1, Emission Factors for Solvent Reclaiming. Processes handling (disturbing) waste use 0.72 lb VOCs emitted per ton of solvent (liquid). This assumption is conservative, as liquid is not all VOCs.</p> <p>e. VOCs Emitted (lb/hr) = Liquid Throughput (ton/hr) x Emission Factor (lb/ton).</p> <p>f. See Section 2.0 for a description of the waste processing activities that may occur in the SSC tent.</p>						

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**Table 5-3. Toxic Air Pollution Emissions from WMF-628 Operations.**

Pollutant	Worst Case Non-Debris	Worst Case Debris	Worst Case Scenario for Waste (Debris and Non-Debris)	SSC Tent Emissions <sup>a,b</sup>	GGT <sup>a,c</sup>	Total Emissions
	wt%	wt%	wt%	lb/hr	lb/hr	lb/hr
<b>Total VOCs<sup>d</sup></b>				9.21E-04	8.19E-04	<b>1.74E-03</b>
Acetone	1	1	1	9.21E-06	8.19E-06	1.74E-05
Benzene	1	1	1	9.21E-06	8.19E-06	1.74E-05
Butyl Alcohol	0.001	1	1	9.21E-06	8.19E-09	9.22E-06
Carbon tetrachloride	5	1	5	4.61E-05	4.10E-05	8.70E-05
Chlorobenzene	1	0	1	9.21E-06	8.19E-06	1.74E-05
Chloroform	1	1	1	9.21E-06	8.19E-06	1.74E-05
Cyclohexane	1	1	1	9.21E-06	8.19E-06	1.74E-05
1,2-Dichloroethane	1	1	1	9.21E-06	8.19E-06	1.74E-05
1,1-Dichloroethylene	1	1	1	9.21E-06	8.19E-06	1.74E-05
2-Ethoxyethanol	1	0	1	9.21E-06	8.19E-06	1.74E-05
Ethyl benzene	1	1	1	9.21E-06	8.19E-06	1.74E-05
Isopropanol	0	1	1	9.21E-06	0.00E+00	9.21E-06
Methanol	0.003	1	1	9.21E-06	2.46E-08	9.24E-06
Methyl ethyl ketone	1	1	1	9.21E-06	8.19E-06	1.74E-05
Methylene chloride	0.07	1	1	9.21E-06	5.73E-07	9.79E-06
Nitrobenzene	1	1	1	9.21E-06	8.19E-06	1.74E-05
1,1,2,2-Tetrachloroethane	0	1	1	9.21E-06	0.00E+00	9.21E-06
Tetrachloroethylene	1	1	1	9.21E-06	8.19E-06	1.74E-05
Toluene	1	1	1	9.21E-06	8.19E-06	1.74E-05
1,1,2-Trichloroethane	1	0	1	9.21E-06	8.19E-06	1.74E-05
Trichloroethylene	1	1	1	9.21E-06	8.19E-06	1.74E-05
1,2,4-Trimethylbenzene	0	1	1	9.21E-06	0.00E+00	9.21E-06
1,3,6-Trimethylbenzene	0	1	1	9.21E-06	0.00E+00	9.21E-06
Xylene	0.005	1	1	9.21E-06	4.10E-08	9.25E-06
<b>Total PM<sup>e</sup></b>				4.92E-03	0.00E+00	<b>4.92E-03</b>
Arsenic	0.0015	1	1	4.92E-05	0.00E+00	4.92E-05
Barium	0.044	1	1	4.92E-05	0.00E+00	4.92E-05
Beryllium	1	1	1	4.92E-05	0.00E+00	4.92E-05
Cadmium	0.1	1	1	4.92E-05	0.00E+00	4.92E-05
Chromium	0.12	1	1	4.92E-05	0.00E+00	4.92E-05
Lead	0.38	25	25	1.23E-03	0.00E+00	1.23E-03
Mercury	2.5	1	2.5	1.23E-04	0.00E+00	1.23E-04
Nickel	1	0	1	4.92E-05	0.00E+00	4.92E-05
Selenium	1	1	1	4.92E-05	0.00E+00	4.92E-05
Silver	0.052	1	1	4.92E-05	0.00E+00	4.92E-05
Asbestos	0	45	45	2.21E-03	0.00E+00	2.21E-03
Cyanide	1	0	1	4.92E-05	0.00E+00	4.92E-05
Polychlorinated biphenyls (PCBs)	15	1	15	7.38E-04	0.00E+00	7.38E-04

a. Emission rate (lb/hr) = Worst Case Concentration (wt%/100) x Total VOC (lb/hr) or Total PM (lb/hr) for the operation.

b. SSC tent calculations are based upon the worst case scenario for waste (debris and non-debris).

c. GGT calculations are based upon non-debris waste.

d. See Table 5-2 for calculations of Total VOCs for each operation.

e. See Table 5-1 for calculations of Total PM for each operation. PM emission values do not account for the use of the two HEPA filters.

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**Table 5-4. WMF-628 Operation Emissions in Comparison with IDAPA Emission Limits.**

Pollutant	Total Emissions (Unabated) <sup>a</sup>	Total Emissions Rate (Abated) <sup>b</sup>	Type <sup>c</sup>	TAP Emission Limit <sup>d</sup>	% of Emission Limit (Abated)	Dispersion Coefficient <sup>e</sup>	Calc. AAC/AACC <sup>f</sup>	AAC/AACC Limit <sup>e</sup>	% of AAC/AACC
	lb/hr	lb/hr		lb/hr		µg/m <sup>3</sup> per lb/hr	µg/m <sup>3</sup>	µg/m <sup>3</sup>	
<b>Total VOCs</b>	<b>1.74E-03</b>	<b>1.74E-03</b>							
Acetone	1.74E-05	1.74E-05	N	119	0%	3.57	6.26E-03	89	0%
Benzene	1.74E-05	1.74E-05	C	8.00E-04	2%	0.37	6.48E-04	1.20E-01	1%
Butyl Alcohol	9.22E-06	9.22E-06	N	10	0%	3.57	6.26E-03	7.5	0%
Carbon tetrachloride	8.70E-05	8.70E-05	C	4.40E-04	20%	0.37	3.24E-03	6.70E-02	5%
Chlorobenzene	1.74E-05	1.74E-05	N	23.3	0%	3.57	6.26E-03	17.5	0%
Chloroform	1.74E-05	1.74E-05	C	2.80E-04	6%	0.37	6.48E-04	4.30E-02	2%
Cyclohexane	1.74E-05	1.74E-05	N	70	0%	3.57	6.26E-03	52.5	0%
1,2-Dichloroethane	1.74E-05	1.74E-05	C	2.50E-04	7%	0.37	6.48E-04	3.80E-02	2%
1,1-Dichloroethylene	1.74E-05	1.74E-05	C	1.30E-04	13%	0.37	6.48E-04	2.00E-02	3%
2-Ethoxyethanol	1.74E-05	1.74E-05	N	1.27	0%	3.57	6.26E-03	0.95	1%
Ethyl benzene	1.74E-05	1.74E-05	N	29	0%	3.57	6.26E-03	21.75	0%
Isopropanol	9.21E-06	9.21E-06	N	65.3	0%	3.57	6.26E-03	49	0%
Methanol	9.24E-06	9.24E-06	N	17.3	0%	3.57	6.26E-03	13	0%
Methyl ethyl ketone	1.74E-05	1.74E-05	N	39.3	0%	3.57	6.26E-03	29.5	0%
Methylene chloride	9.79E-06	9.79E-06	C	1.60E-03	1%	0.37	6.48E-04	2.40E-01	0%
Nitrobenzene	1.74E-05	1.74E-05	N	0.333	0%	3.57	6.26E-03	0.25	3%
1,1,2,2-Tetrachloroethane	9.21E-06	9.21E-06	C	1.10E-05	84%	0.37	6.48E-04	1.70E-02	4%
Tetrachloroethylene	1.74E-05	1.74E-05	C	1.30E-02	0%	0.37	6.48E-04	2.1	0%
Toluene	1.74E-05	1.74E-05	N	25	0%	3.57	6.26E-03	18.75	0%
1,1,2-Trichloroethane	1.74E-05	1.74E-05	C	4.20E-04	4%	0.37	6.48E-04	6.20E-02	1%
Trichloroethylene	1.74E-05	1.74E-05	C	5.10E-04	3%	0.37	6.48E-04	7.70E-01	0%

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Pollutant	Total Emissions (Unabated) <sup>a</sup>	Total Emissions Rate (Abated) <sup>b</sup>	Type <sup>c</sup>	TAP Emission Limit <sup>d</sup>	% of Emission Limit (Abated)	Dispersion Coefficient <sup>e</sup>	Calc. AAC/AACC <sup>f</sup>	AAC/AACC Limit <sup>e</sup>	% of AAC/AACC
1,2,4-Trimethylbenzene	9.21E-06	9.21E-06	N	8.2	0%	3.57	6.26E-03	6.15	0%
1,3,6-Trimethylbenzene	9.21E-06	9.21E-06	N	8.2	0%	3.57	6.26E-03	6.15	0%
Xylene	9.25E-06	9.25E-06	N	29	0%	3.57	6.26E-03	21.75	0%
<b>Total PM</b>	<b>4.92E-03</b>	<b>4.92E-07</b>							
Arsenic	4.92E-05	4.92E-09	C	1.50E-06	0%	0.37	1.82E-05	2.30E-04	8%
Barium	4.92E-05	4.92E-09	N	0.033	0%	3.57	1.76E-04	0.025	1%
Beryllium	4.92E-05	4.92E-09	C	2.80E-05	0%	0.37	1.82E-05	4.20E-03	0%
Cadmium	4.92E-05	4.92E-09	C	3.70E-06	0%	0.37	1.82E-05	5.60E-04	3%
Chromium	4.92E-05	4.92E-09	C	5.60E-07	1%	0.37	1.82E-05	8.30E-05	22%
Lead	1.23E-03	1.23E-07	S	NA	NA	3.57	NA	NA	NA
Mercury	1.23E-04	1.23E-08	N	0.001	0%	3.57	4.39E-04	0.0005	88%
Nickel	4.92E-05	4.92E-09	C	2.70E-05	0%	0.37	1.82E-05	4.20E-03	0%
Selenium	4.92E-05	4.92E-09	N	0.013	0%	3.57	1.76E-04	0.01	2%
Silver	4.92E-05	4.92E-09	N	0.001	0%	3.57	1.76E-04	0.005	4%
Asbestos	2.21E-03	2.21E-07	S	NA	NA		NA	NA	NA
Cyanide	4.92E-05	4.92E-09	N	0.333	0%	3.57	1.76E-04	0.25	0%
PCBs	7.38E-04	7.38E-08	C	6.60E-05	0%	0.37	2.73E-04	1.00E-02	3%

a. Emissions do not account for the use of two HEPA filters.

b. Emissions account for the use of two HEPA filters.

c. N = Non-carcinogenic TAP per IDAPA 58.01.01.585. C = Carcinogenic TAP per IDAPA 58.01.01.586. S = Significant pollutant per IDAPA 58.01.01.006.

d. TAP emission limit and AAC value per IDAPA 58.01.01.585 and 586.

e. Dispersion coefficient for non-carcinogens and carcinogens taken from Table 9 in Appendix E of the "BNFL Inc. Transuranic Retrieval Enclosure – Storage Area (TSA-RE)," State of Idaho Department of Environmental Quality, Mike Stambulis, April 17, 2002.

f. Calculated AAC ( $\mu\text{g}/\text{m}^3$ ) = Total Emissions Unabated (lb/hr) x Dispersion Coefficient ( $\mu\text{g}/\text{m}^3$  per lb/hr).

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**Table 5-5. Estimated Emissions from Propane Heaters in WMF-628.**

<b>Pollutant</b>	<b>Emission Factor (lb/1,000 gals)<sup>a,b</sup></b>	<b>Emissions from Two 598,000 Btu/hr Heaters (lb/hr)</b>	<b>Total Annual Emissions (Ton/yr)<sup>c</sup></b>
Carbon Monoxide	1.9	2.5E-02	1.1E-01
Nitrogen Oxides	14	1.8E-01	8.0E-01
Sulfur Dioxide	1.5	2.0E-02	8.6E-02
PM/PM-10	0.4	5.2E-03	2.3E-02
Ozone (VOCs)	0.5	6.5E-03	2.9E-02
<p>a. Emission factors are from AP-42, Table 1.5-1, Emission Factors for LPG Combustion for commercial boilers with heat input capacities between 0.3 and 10 million Btu/hr.</p> <p>b. The emission factor for sulfur dioxide is 0.10S (S = 15 gr/100 ft<sup>3</sup>).</p> <p>c. Assumes 8,760 hours per year of operation for each heater.</p>			

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## 6.0 RESULTS ANALYSIS

Below is a list the Category I and Category II Exempt Sources requirements and information on how the requirements are satisfied. Operations associated with RTR, assay, GGT, liquid absorption, decanting of liquids, relidding of drums, and the removal of inner containers from drums, and SWB loading meet the Category I requirements. The two propane heaters located within WMF-628 meet the Category II requirements.

<b>IDAPA 58.01.01 220. GENERAL EXEMPTION CRITERIA FOR PERMIT TO CONSTRUCT EXEMPTIONS</b>	
<p><b>01. General Exemption Criteria.</b> Sections 220 through 223 may be used by owners or operators to exempt certain sources from the requirement to obtain a permit to construct. No permit to construct is required for a source that satisfies all of the following criteria, in addition to the criteria set forth at Sections 221, 222, or 223:</p>	
<p><b>a.</b> The maximum capacity of a source to emit an air pollutant under its physical and operational design without consideration of limitations on emission such as air pollution control equipment, restrictions on hours of operation and restrictions on the type and amount of material combusted, stored or processed would not:</p>	
<p><b>i.</b> Equal or exceed one hundred (100) tons per year of any regulated air pollutant.</p>	
<b>Response</b>	This source will not exceed one hundred tons per year of any regulated air pollutant. See Table 6-1.
<p><b>ii.</b> Cause an increase in the emissions of a major facility that equals or exceeds the significant emissions rates set out in the definition of significant at Section 006.</p>	
<b>Response</b>	The results of the significant emission analysis are shown in Table 6-1. The pollutants listed in the table include those compounds from the significant emissions list specified at IDAPA 58.01.01.006.92 that are expected to be present in the wastes characterized in the various WMF-628 operations, or emitted from the propane heaters. All WMF-628 emissions are estimated to be below the significant thresholds, as required by the rules for a Category I and Category II exemption.
<p><b>b.</b> Combination. The source is not part of a proposed new major facility or part of a proposed major modification.</p>	
<b>Response</b>	This source is not part of a proposed new major facility nor is it part of a major modification.

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<p><b>IDAPA 58.01.01 220. GENERAL EXEMPTION CRITERIA FOR PERMIT TO CONSTRUCT EXEMPTIONS</b></p>
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**02. Record Retention.** Unless the source is subject to and the owner or operator complies with Section 385, the owner or operator of the source, except for those sources listed in Subsections 222.02.a. through 222.02.g, shall maintain documentation on site, which shall identify the exemption determined to apply to the source and verify that the source qualifies for the identified exemption. The records and documentation shall be kept for a period of time not less than five (5) years from the date the exemption determination has been made or for the life of the source for which the exemption has been determined to apply, which ever is greater, or until such time as a permit to construct or an operating permit is issued which covers the operation of the source. The owner or operator shall submit the documentation to the Department upon request.

<b>Response</b>	A copy of this exemption will be kept in the AMWTP Facility Operating Record.
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**221. CATEGORY I EXEMPTION.**

No permit to construct is required for a source that satisfies the criteria set forth in Section 220 and the following:

**01. Below Regulatory Concern.** The maximum capacity of a source to emit an air pollutant under its physical and operational design considering limitations on emissions such as air pollution control equipment, restrictions on hours of operation and restrictions on the type and amount of material combusted, stored or processed shall be less than ten percent (10%) of the significant emission rates set out in the definition of significant at Section 006.

<b>Response</b>	Emissions from WMF-628 are below regulatory concern as specified in Section 006. See Table 6-1 for additional information.
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**02. Radionuclides.** The source shall have potential emissions that are less than one percent (1%) of the applicable radionuclides standard in 40 CFR Part 61, Subpart H.

<b>Response</b>	Radionuclide emissions for WMF-628 operations are below 1% of the regulatory requirements stated in 40 CFR Part 61, Subpart H. See Section 4.0 for additional information.
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**03. Toxic Air Pollutants.** The source shall comply with Section 223.

<b>Response</b>	The WMF-628 source qualifies as a Level III source. See Tables 5-3 and 5-4 for additional information.
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**222. CATEGORY II EXEMPTION.**

No permit to construct is required for the following sources.

**02. Other Exempt Sources.** A source that satisfies the criteria set forth in Section 220 and that is specified below:

- c. Fuel burning equipment for indirect heating and for heating and reheating furnaces using natural gas, propane gas, and liquefied petroleum gas exclusively with a capacity of less than fifty (50) million Btu's per hour input.

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<p><b>IDAPA 58.01.01 220. GENERAL EXEMPTION CRITERIA FOR PERMIT TO CONSTRUCT EXEMPTIONS</b></p>
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<b>Response</b>	The two 598,000 Btu/hr propane heaters fit under 220 as described above.
<b>223. EXEMPTION CRITERIA AND REPORTING REQUIREMENTS FOR TOXIC AIR POLLUTANT EMISSIONS.</b>	<p>No permit to construct for toxic air pollutants is required for a source that satisfies any of the exemption criteria below, the record keeping requirements at Subsection 220.02, and reporting requirements as follows:</p> <p><b>02. Level III Exemption.</b> To obtain a Level III exemption, the source shall satisfy the following criteria:</p> <ul style="list-style-type: none"> <li><b>a.</b> The uncontrolled ambient concentration at the point of compliance (refer to Section 210) for all toxic air pollutants shall be less than or equal to all applicable acceptable ambient concentration listed in Sections 585 and 586.</li> <li><b>b.</b> The controlled emission rate (refer to Section 210) for all toxic air pollutants emitted by the source shall be less than or equal to all applicable screening emission levels listed in Sections 585 and 586.</li> </ul>
<b>Response</b>	<p>Table 5-4 compares uncontrolled (i.e., no credit is taken for filtration or other means of abatement) TAP emissions from WMF-628 operations to the respective acceptable ambient concentrations listed in 585 and 586. The calculated ambient air concentration of TAP emissions from WMF-628 are below the concentrations listed in 585 and 586. Table 5-4 also compares controlled (i.e., credit is taken for the two HEPA filters located on the SSC tent) TAP emissions to the emission limits listed in 585 and 586. All estimated controlled emissions from WMF-628 are below the emission limits listed in 585 and 586.</p>
	<p><b>05. Annual Report For Toxic Air Pollutant Exemption.</b> Commencing on May 1, 1996, and annually thereafter, the owner or operator of a source claiming a Level I, II, or III exemption shall submit a certified report for the previous calendar year to the Department for each Level I, II, or III exemption determination. The report shall be labeled "Toxic Air Pollutant Exemption Report" and shall state the date construction has or will commence and shall include copies of all exemption determinations completed by the owner or operator for each Level I, II, and III exemption.</p>
<b>Response</b>	This Category Exemption will be sent to the DEQ in May of next year for the calendar year 2006.

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**Table 6-1. Significant Emissions Comparison.**

<b>Pollutant</b>	<b>Emissions from WMF-628 Activities<sup>a,b</sup></b>	<b>Emissions from Propane Heaters<sup>c</sup></b>	<b>Total WMF-628 Emissions</b>	<b>Significant Emission Limit<sup>d</sup></b>	<b>% of Significant Limit<sup>e</sup></b>
	ton/yr	ton/yr	ton/yr	ton/yr	
Carbon monoxide	0	1.10E-01	1.10E-01	100	0.11%
Nitrogen oxides	0	8.00E-01	8.00E-01	40	2.00%
Sulfur dioxide	0	8.60E-02	8.60E-02	40	0.22%
Particulate matter (PM)	4.92E-03	2.30E-02	2.79E-02	25	0.11%
PM-10 <sup>f</sup>	4.92E-03	2.30E-02	2.79E-02	15	0.19%
Ozone (as VOCs) <sup>g</sup>	1.74E-03	2.90E-02	3.07E-02	40	0.08%
Lead	1.23E-07	0	1.23E-07	0.6	0.00%
Beryllium	4.92E-09	0	4.92E-09	0.0004	0.00%
Mercury	1.23E-08	0	1.23E-08	0.1	0.00%
Radionuclides (EDE) <sup>h</sup>	1.41E-04 mrem	0	1.41E-04 mrem	0.1	0.14%
<p>a. Nonradioactive WMF-628 activity emissions are from Table 5-3.</p> <p>b. Listed TAP emissions are abated (calculated considering air pollution control equipment removal efficiencies).</p> <p>c. Propane heater emissions are from Table 5-5.</p> <p>d. "Significant" emission limits are defined in IDAPA 58.01.01, Section 006.</p> <p>e. % of Significant Limit = (Total WMF-628 Emissions / Significant Emission Limit) x 100. For nonradioactive emissions, a Category I exemption requires abated (controlled emissions to be less than 10% of the significant limit. For radionuclides, the Effective Dose Equivalent must be &lt; 0.1 mrem/yr to meet Category I requirements.</p> <p>f. All PM is assumed to be PM-10 (PM with a diameter &lt; 10 micrometers) for conservatism.</p> <p>g. Total emitted VOCs are used as a measure of ozone.</p> <p>h. See Section 4.0 for radionuclide calculations.</p>					

<p style="text-align: center;"><b>Advanced Mixed Waste Treatment Facility</b> <b>Category I and Category II Exemption for the AMWTP WMF-628</b></p>
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## 7.0 REFERENCE

- (1) 40 CFR 61, 2003, "National Emission Standards for Hazardous Air Pollutants," Code of Federal Regulations, Office of the Federal Register, April 2003.
- (2) 40 CFR 63, 2006, "National Emission Standards for Hazardous Air Pollutants for Source Categories," Code of Federal Regulations, Office of the Federal Register, July 2006.
- (3) B. D. Ravio et al., 1995, "Waste Description Information for Transuranic-Contaminated Wastes Stored at the INEL," INEL-95/0412, December 1995.
- (4) DOE, 2004, National Emissions Standards for Hazardous Air Pollutants – Calendar Year 2003 INL Report for Radionuclides, DOE/ID-10890(04), June 2004.
- (5) EDF-0152, Average Activity in ID 003 Waste, Rev. 00, Martin Clapham, December 14, 2006.
- (6) EPA, 1985, *Compilation of Air Pollutant Emission Factors*, AP-42, Volume 1, Stationary Point and Area Sources, Supplement F, U.S. Environmental Protection Agency, Washington, D.C.
- (7) EPA, 1990, The Clean Air Act Assessment Package—1988 (CAP-88), A Dose and Risk Assessment Methodology for Radionuclide Emissions to Air, Volumes 1-3, prepared by D. A. Beres, SC&A, Inc., for the U.S. Environmental Protection Agency.
- (8) IDEQ, 2004, "Rules for the Control of Air Pollution in Idaho," Department of Health and Welfare, Division of Environmental Quality, IDAPA 58.01.01.
- (9) IDAPA 58.01.01.006, General Definitions, Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, April 2000.
- (10) IDAPA 58.01.01.220, General Exemption Criteria for Permit to Construct Exemptions, Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, April 2006.
- (11) IDAPA 58.01.01.221, Category I Exemptions, Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, April 2000.
- (12) IDAPA 58.01.01.222, Category II Exemptions, Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, April 2000.
- (13) IDAPA 58.01.01.585, "Toxic Air Pollutants Non-Carcinogenic Increments," Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, June 1995.

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- (14) IDAPA 58.01.01.586, “Toxic Air Pollutants Carcinogenic Increments,” Idaho Administrative Procedures Act, Idaho Department of Environmental Quality, June 1995.
- (15) RPT-TRUW-12, AMWTP Waste Stream Designations, Rev. 8, Advanced Mixed Waste Treatment Project, August 15, 2006.
- (16) Staley C.S., M.L. Abbott, and P.D. Ritter, INEEL Air Modeling Protocol INEEL EXT-04-02511 December 2004.